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Alaska Department of Fish and Game
Bering Sea Crab Test Fishery Program
Overview and Project Update

By

Donn A. Tracy

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PROGRAM OVERVIEW

Beginning in 1990, with the support of the fishing industry and the legislature, the Alaska Department of Fish and Game (ADF&G) implemented the Bering Sea crab Research Project using the State of Alaska Test Fishery program as the funding source. Annual research surveys are a major component of the project, and each year the department solicits bids from vessel owners and fishing organizations for a charter(s) that is utilized to stage research activities and conduct cost recovery fishing. Revenues generated from the sale of crabs caught during the surveys are used to cover ADF&G's operating costs. This unique program has allowed the department to conduct research that otherwise would not have been possible.

The primary objective of the test fish program has been developing the technology to implement a large-scale tagging study for assessing Bristol Bay red king crab stock abundance with the use of internal tags. Since 1990, efforts to accomplish this goal have been focused on the use of Passive Integrated Transponders, or PIT tags, which are small (11 mm in length), inert microchips imbedded with a unique code number. When stimulated from an external power source, each tag transmits its code back to a receiver where it is stored. In this way, the biological characteristics and the fate of tagged individual animals recovered can be tracked and monitored.

Over the past several years, the process of assessing the feasibility of utilizing PIT tags for red king crab mark recapture studies have focused on the development of a technique to implant PIT tags into the small, right leg attached to the abdomen or `tail' section of the crab; the development of on-line PIT tag detectors capable of providing reliable tag detection rates from the butchered remains of processed crabs; the effects of tagging on crab viability; and the retention rate of tags by crabs following the completion of a molt cycle.

However, the test fishery program has also supported other research studies aimed at collecting and analyzing data on critical commercial crab fisheries in the Bering Sea. These studies have included:

- A Tanner board gear study in 1995 which focused on comparing the effectiveness of pots containing three inch and five inch tunnel height openings in reducing bycatch of juvenile red king crabs while still maximizing catches of legal Tanner crabs. This study was conducted in response to recent proposals submitted to the Alaska Board of Fisheries requesting the opening of the eastern portion of Bristol Bay to Tanner crab fishing. Regulations requiring three inch tunnel openings on all Tanner crab pots fished in the Bering Sea were implemented in 1993.

- A 1995 tagging survey of blue king crab stocks using internal (PIT) and external tags in the St. Matthew District of the Bering Sea Management Area to determine the fishing exploitation rate and to assess population distribution relative to the location of commercial fishery. The reproductive life history of female blue king crabs was also investigated.

- An 18-month tag retention study conducted between 1992 and 1994 at the Seward Marine Center to evaluate the effects of internal tags on crab mortality and to determine whether or not internal tags are retained when crabs molt.

- An evaluation of the effects of at-sea crab release methods on crab mortality. As a result of heightened interest by the Alaska Board of Fisheries in 1993, a variety of handling mortality studies have been completed by state and federal biologists.

- A 1991 tagging survey of golden king crab stocks to determine fishing mortality rates and to assess migration of crabs between the Adak and Dutch Harbor fisheries management areas.

- Support of the Mandatory Shellfish Observer Program for analysis and reporting of observer-gathered commercial shellfish data. Additionally, the test fish vessel has been utilized in the past for observer training and testing.

- Genetics-based king crab stock identification studies and separation of Tanner and snow crab hybrids using both genetic analysis and new image processing technology.

To date, ADF&G has successfully addressed the major elements necessary for implementation of a meaningful PIT tag recovery program. The closure of the Bristol Bay fishery during the last two year period, coupled with the current projected costs associated with launching a large scale PIT tagging project have placed constraints on achieving the primary goal of the program.

Planned program activities in 1996 will include a 31 day research cruise in the Bristol Bay area, and a 26 day trawl survey in the Norton Sound District of the Bering Sea to assess red king crab stocks exploited in the local commercial fishery. Objectives of the Bristol Bay charter will likely encompass a continuation of the gear studies initiated in 1995, and also cost recovery fishing.

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